

Remarks

I. Status of the Application and Claims

As originally filed, the present application had a total of 15 claims. Claims 6-15 were withdrawn as the result of a restriction requirement. New claims 16-18 have been added herein. Thus, the claims presently pending are 1-5 and 16-18.

II. The Amendments

All of the changes made to claims are shown in the Appendix attached hereto. Claim 1 has been amended to clarify the definitions of substituents for R and R1. Claims 1 and 5 have been amended to recite only one range limitation in the claim. Support for all of the amendments and new claims 16-18 can be found in originally presented claims 1 and 5.

None of the amendments described above add new matter to the application and their entry is therefore respectfully requested.

III. Claim Objections

Claim 1 is objected to because it, allegedly, characterizes carbon black as an oxidic filler or as a siliceous filler. Applicants have amended claim 1 and believe that this objection has been obviated as a result.

The Rejections

I. Rejection of Claims Under 35 U.S.C. § 112, Second Paragraph

On pages 2 and 3 of the Office Action claim 1 is rejected based upon the allegation that the term "preferably" renders it indefinite. Since claim 1 has been amended to delete this term, it is submitted that this basis of rejection has been overcome.

Claim 1 is also alleged to be indefinite because it defines an R group in a confusing manner. Applicants believe that this rejection has also been overcome by the amendments to claim 1 made herein.

Finally, claims 1 and 5 are rejected as being indefinite for reciting a narrow limitation together with a broad limitation. Again, Applicants have amended claims to eliminate this problem and believe that the present rejection has been obviated.

II. Rejection of Claims Under 35 U.S.C. 102(b)

On page 4 of the Office Action, claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolff, *et al.* (U.S. 5,159,009, hereinafter "Wolff"). This rejection is respectfully traversed.

The claimed invention is directed to a rubber powder containing large amounts of one or more surface modified oxidic or siliceous fillers and carbon black in an amount of >250 phr to 5000 phr. In contrast, the cited reference discloses rubber powders filled with surface modified carbon black, but fails to suggest the use of surface modified oxidic or siliceous fillers as potential additives. The invention, therefore, is not anticipated by Wolff.

On pages 4-5 of the Office Action, claims 1, 2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Görl *et al.* (*Kautschukund Gummi-Kunststoffe* 51:250-252, 254-256 and 258 (1998), hereinafter "Görl"). This rejection is respectfully traversed.

The present rejection is based on the allegation that Görl discloses SBR-type rubbers containing fillers in an amount of between 40 and 1000 phr. The Examiner also alleges that the reference discloses the use of coupling agents such as bis(3-triethoxysilylpropyl)-tetrasulfane to achieve efficient dispersion of silica in a rubber matrix. Although Görl may mention both high amounts of fillers in SBR rubbers and coupling agents for silicas, it does not disclose rubber powders containing large amounts of surface modified siliceous fillers. Rubber powders described in the reference contain only 75 phr of surface treated silica filler-well below the level required by Applicants' claims. The reference, therefore, does not anticipate the claimed invention.

III. Rejection of Claims Under 35 U.S.C. §103

On pages 5 and 6 of the Office Action, claims 1, 2 and 5 are rejected as being unpatentable over to Smigerski, *et al.* (U.S. 4,788,231, hereinafter "Smigerski") in view of

Kerner, *et al.* (U.S. 4,704,414, hereinafter "Kerner"). On pages 6 and 7, claims 1-5 are rejected as being unpatentable over Smigerski in view of Wolff, *et al.* (U.S. 5,116,886, hereinafter "Wolff '886").

Applicants respectfully traverse these rejections.

The primary reference cited by the Examiner, Smigerski, discloses a powdered rubber composition comprising carbon black and mentions the possibility of incorporating silica fillers. However, the examples in the reference only disclose the addition of very small amounts of silica filler to compositions containing substantially higher amounts of carbon black. Smigerski does not teach the use of these fillers in an amount similar to that required by Applicants' claims. In effect, it guides one of ordinary skill in the art to prepare compositions containing, at most, a small amount of silica filler.

The secondary references, *i.e.*, Kerner and Wolff '886 teach that surface-modified silica fillers are suitable, and even beneficial in some respects, for use in rubber compositions. However neither of these references suggests that the surface modified fillers may or should be used in high amounts. In fact, it appears that none of the compositions exemplified in the secondary references contains modified fillers in an amount of more than about 56 phr. It is, therefore, submitted that the claimed invention would not have been obvious from the teachings of any of the references either alone or in combination. Therefore, the rejection over Smigerski in view of either Kerner or Wolff '886 should be withdrawn.

On pages 7 and 8 of the Office Action, claims 1-4 are rejected as unpatentable over Wolff, *et al.* (U.S. 5,159,009, hereinafter "Wolff '009") in view of Yamamoto (U.S. 6,277,908, hereinafter "Yamamoto") and Görl, *et al.* (U.S. 5,216,055, hereinafter "Görl '055").

Applicants respectfully traverse this rejection.

The Examiner asserts that Wolff '009 discloses a composition containing rubber and organosilicon modified filler. Applicants disagree. As discussed above, the disclosure of this

reference is limited to carbon black fillers modified with organosilicon compounds. These fillers fall outside of the scope of the surface modified oxidic or siliceous fillers recited in Applicants' claims. Since the reference does not fairly suggest rubber powders containing the specified fillers, any rejection based on Wolff '009 should be withdrawn.

On page 8 of the Office Action claims 1-5 are rejected as being unpatentable over Görl in view of Yamamoto and Görl '055. This rejection is respectfully traversed.

As discussed above, Görl does not disclose rubber powders containing an amount of surface modified siliceous filler approaching the amount required by Applicants' claims. There also is nothing in this reference to suggest that increasing the amount of surface modified filler to Applicants' level in rubber powders would be advantageous. Thus, Görl cannot, in itself, render the claimed invention obvious. The secondary references, Yamamoto and Görl '055 are directed to the use of antioxidants in polymeric compositions. Therefore, these references do not cure the deficiencies of Görl. In light of these considerations, Applicants submit that none of the claims as amended herein are directed to processes that would be obvious based upon the cited combination of references. It is therefore respectfully requested that the rejection of claims under 35 U.S.C. § 103 be withdrawn.

Conclusion

In light of the amendments and discussion above, Applicants submit that all of the Examiner's rejections have been overcome. It is therefore respectfully requested that these rejections be withdrawn and that the claims presently pending in the application be allowed.

If, in the opinion of the Examiner, a phone call may help to expedite the prosecution of this application, the Examiner is invited to call Applicants' undersigned attorney at (703) 905-2173.

Respectfully submitted,

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Appendix

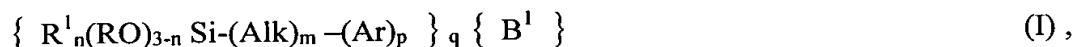
Version with Markings to Show Changes Made

Claims 1 and 5 have been amended herein. The changes that were made to the claims are shown below with underlined words indicating text that has been added to the claim and bracketed words indicating text that has been removed.

2. (Amended) A rubber powder, containing one or more oxidic or siliceous fillers, comprising at least one member selected from the group consisting of synthetic fillers in an amount of > 250 phr to 5000 phr[,] and naturally occurring fillers in an amount of > 350 phr to 5000 phr; and

carbon black in an amount of >250 phr to 5000 phr, wherein the total amount of [filler] the fillers and carbon black does not exceed 5000 phr; [and]

wherein the surface of said oxidic or siliceous fillers is modified with one or more organosilicon compounds of the [general] formulae



or



in which

B¹: represents -SCN, -SH -Cl, NH₂ (when q = 1) or -S_x- (when q = 2),

R [and R¹]: [represent] represents an alkyl group with 1 to 4 carbon atoms, branched or unbranched, or a phenyl group, wherein all the groups R [and R¹] may be identical or different, [and preferably represent an alkyl group]

[R] R^1 : [may also represent] represents a C₁-C₄-alkyl or C₁-C₄-alkoxy group, branched or unbranched, or a phenyl group, wherein all the groups R^1 may be identical or different,

n: is 0, 1 or 2,

Alk: represents a divalent straight or branched hydrocarbon group with 1 to 6 carbon atoms,

m: is 0 or 1,

Ar: represents an arylene group with 6 to 12 carbon atoms,

p: is 0 or 1, with the proviso that p, m and n are not simultaneously 0,

x: is a number from 2 to 8,

Alkyl: represents a monovalent straight or branched saturated hydrocarbon group with 1 to 20 carbon atoms, [preferably 2 to 8 carbon atoms,]

Alkenyl: represents a monovalent straight or branched unsaturated hydrocarbon group with 2 to 20 carbon atoms[, preferably 2 to 8 carbon atoms,].

5. (Amended) A rubber powder according to claim 1, which has a particle size range from 25 μm to 3000 μm [or, in granulated form, from 2 to 10 mm].